UNITED STATES PATENT AND TRADEMARK OFFICE

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William S Frommer
Frommer Lawrence & Haug
745 Fifth Avenue
New York, NY 10151

EXAMINER
VANCHY JR, MICHAEL J

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2008*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11 and 13* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1, 3-11, and 13* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

2.   Claims 1, 6-9, 11, and 13 are rejected under 35 U.S.C. 112, second paragraph,

as being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention. The examiner points to "determination

means for determining **a distance** between the center point and **each of the plurality**

of first feature points." The reason for indefiniteness is because "a distance" is

determined however there is a plurality of distances being obtained. Thus, it is unclear

if the distance is all the distances added together, or a plurality of distances for each

singular point. The examiner points out that an easy correction would be to put

"determining **distances**..." Appropriate correction is required.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 6 and 11 are rejected under 35 U.S.C. 101 as not falling within one of the

four statutory categories of invention. While the claims recite a series of steps or acts to

be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another

statutory category (such as a particular apparatus), or (2) transform underlying subject

matter (such as an article or material) to a different state or thing (Reference the May

15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy,

John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101" – publicly

available at USPTO.GOV, "memorandum to examining corp"). The instant claims

neither transform underlying subject matter nor positively tie to another statutory

category that accomplishes the claimed method steps, and therefore do not qualify as a

statutory process. In order for a process to be "tied" to another statutory category, the

structure of another statutory category should be positively recited in a step or steps

significant to the basic inventive concept, and NOT just in association with statements of

intended use or purpose, insignificant pre or post solution activity, or implicitly.

Claim Rejections - 35 USC § 103

1.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

2.   **Claims 1, 3-11, and 13 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Califano et al., 6,041,133 and further in view of Fujii et al.,

6,233,348 B1.

The examiner takes into account that even though Califano et al. is silent on

taking the area of the triangle, it would be obvious to one of ordinary skill in the art to

calculate the area based on the lengths of the sides acquired by Califano et al. (Fig. 4

and col. 5, lines 31-42) using, but not limited to, a formula such as Heron's formula (also

called Hero's formula).

Regarding claim 1, Califano teaches a fingerprint information processing apparatus (Fig. 1A and col. 2, lines 4-9) characterized by comprising: first detection means for detecting from a fingerprint image first feature points which of are either ridge bifurcations or ridge endings of a fingerprint (Fig. 2 and col. 5, lines 22-27); first generation means for generating a triangle which connects three arbitrary points close to one another from among the plurality of first feature points (Fig. 2 and col. 5, lines 31-33), wherein the first generation means uses the sorted first feature points to generate the triangle (Fig. 2 and col. 5, lines 31-33); first calculation means for calculating an area and a length of each side of the triangle generated by the first generation means (Fig. 4 and col. 5, lines 31-42); and storage means for storing the area and the length of each side of the triangle calculated by the first calculation means (Fig, 1A, Abstract and col. 1, lines 47-49).

Califano does not explicitly teach finding the center point of a registered image, however Fujii teaches finding the center point of a fingerprint (Fig. 30A-B and col. 37, lines 59-64) and then finding the distances from the center point of feature points (Fig. 30A-B, col. 37, line 64 to col. 38 line 10). As the applicant points out, Fujii determines the center point of the fingerprint and does not find the center of the actual image. However, the examiner points out that this is merely a simple substitution of one known element for another to obtain predictable results. Both the applicant and Fujii use their independent centers for matching the taken fingerprint image with a registered image. The difference is that Fujii takes the center of the actual fingerprint, thus creating a more accurate identification. The applicant takes the center of the image, which is computationally faster to determine and yields quicker and easier results, however, is not as accurate. It would be obvious to one of ordinary skill in the art at the time of the invention to modify Fujii to determine the center of the image, and then determine the distances of the featured points from that specified center, for quicker and easier computation since taking the center of an image is notoriously well know in the art.

Califano et al. describes in the Abstract creating "*subsets*" and a "*key is generated that characterizes the fingerprint in the vicinity of the selected subset.*" Even though it is not explicitly stated, these subsets and keys are formed for the purposes of

sorting the feature points of different fingerprints. In Figure 9, Califano et al, sorts the sides of each triangle in a predetermined manner, as stated *"the ordering may be accomplished by first selecting the largest of the three sides associated with the triplet* (col. 9, lines 1-15)." However Califano et al. is silent on using the distance between the center point and the feature points for means of sorting. Fujii et al. establishes the feature points and the coordinates, type, and direction of each feature point, including their distances from the center (Fig. 30A-B, col. 37, line 64 to col. 38 line 10). Taking the sorting means for feature points in Califano et al. and using it for the distances found in Fujii et al., would have been obvious to one skilled in the art at the time of the invention. Since Califano et al. already states that it can order distances based on the sides of the triangle it would be obvious to also sort based on distance from the center.

The Examiner also takes into account that while Fujii does not explicitly state "determination means for determining a distance between the center point and each of the plurality of first feature points," Fujii does determine the coordinates for the feature points including coordinates for the center of the fingerprint (col. 18, lines 55-66, . The center coordinate is used for matching, so that the feature points will match up before taking the specific distance and using a threshold to determine if there is a match. Thus the feature points correspond to the center of the fingerprint (col. 36, lines 57-60 and col. 37, lines 16-22). The Applicant uses the center to determine distances between the center and the feature points, however, this is the same as matching the center's first and then creating a triangle and determining distances. Also, since Fujii calculates the coordinates for the feature points and center, it would be clear to one of ordinary skill in the art that a simple computation based on the coordinates would give the distance from center to any feature point for matching, occurring in the information storing unit 94 (col. 37 line 59 to col. 38, line 10).

Regarding claim 3, Califano et al. teaches the three first feature points which constitute the one triangle are, respectively, the first point, the second point and the third point (Fig. 2 and col. 5, lines 31-33).

However Califano et al. fails to teach the following limitations that Fujii et al. does:

Fujii et al. teaches the information processing apparatus as described in claim 1, wherein: the first detection means further detects second feature points which are the other between the ridge bifurcations and the ridge endings, and further including second calculation means for calculating at least one of a distance and a direction between a first point and a fourth point which is the one of the second feature points that is closest to the first point, at least either a distance and a direction between a second point and a fifth point which is the one of the second feature points that is closest to the second point, and at least one of a distance and a direction between a third point and a sixth point which is the one of the second feature points that is closet to the third point (Fig. 30A-B, col. 18, lines 55-58, and col. 37, line 64 to col. 38 line 10); the storage means further stores at least one of the distance and the direction calculated by the second calculation means, between the first point and the fourth point, between the second point and the fifth point, and between the third point and the sixth point (Abstract and col. 1, lines 47-49).

The examiner takes into account that Fujii et al. doesn't specifically use "first, second, third…" points but does take the distance and direction of feature points, which can be the points specified by the applicant.

Taking the combined teachings of Califano et al. and Fujii et al., it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate more distances between more feature points to increase the accuracy of identifying a positive match between stored fingerprints and the one in question.

Regarding claim 4, Fujii et al. teaches a calculation means calculates at least one of the distance and the direction between the first point and the fourth point, between the second point and the fifth point, and between the third point and the sixth point by using the sorted second feature points (Fig. 30A-B and col. 37, line 64 to col. 38 line 10).

The examiner takes into account that Fujii et al. doesn't specifically use "first, second, third…" points but does take the distance and direction of feature points, which can be the points specified by the applicant.

However Fujii et al. fails to teach the following limitations that Califano et al. does: A sorting means (Abstract).

Califano et al. describes in the Abstract creating "*subsets*" and a "*key is generated that characterizes the fingerprint in the vicinity of the selected subset.*" Even though it is not explicitly stated, these subsets and keys are formed for the purposes of sorting the feature points of different fingerprints. In Figure 9, Califano et al, sorts the sides of each triangle in a predetermined manner, as stated "*the ordering may be accomplished by first selecting the largest of the three sides associated with the triplet.* (col. 9, lines 1-15)" However, Califano et al. is silent on using the distance between the center point and the feature points for means of sorting. Fujii et al. establishes the feature points and the coordinates, type, and direction of each feature point, including their distances from the center (Fig. 30A-B, col. 37, line 64 to col. 38 line 10). Taking the sorting means for feature points in Califano et al. and using it for the distances found in Fujii et al., would have been obvious to one skilled in the art at the time of the invention. Since Califano et al. already states that it can order distances based on the sides of the triangle it would be obvious to also sort based on distance from the center.

Re claim 5, the information processing apparatus (Fig. 1A and col. 2, lines 4-9) as described in claim 1, further comprising: second calculation means for calculating an area and a length of each side of the triangle generated by the second generation means (col. 1, lines 60-66) and (Fig. 4 and col. 5, lines 31-42); and comparison means for comparing an area and a length of each side of the triangle stored in the storage means with the area and the length of each side of the triangle of the fingerprint image subject to collation calculated by the second calculation means (Abstract).

Regarding claim 6, see rejection made to claim 1, for it addresses the rejection made to the apparatus of this method.

Regarding claim 7, see rejection made to claim 1, for it addresses the rejection made to the apparatus of this computer-readable medium.

Regarding claim 8, see rejection made to claim 1, for it addresses the rejection made to the apparatus of this program.

Regarding claim 9, see rejection made to claim 1, for it addresses all the limitations of claim 9, excluding the comparison means. Califano teaches a comparison means for comparing the area and the length of each side of the triangle of the fingerprint image subject to collation, which are calculated by the first calculation means, with an area and a length of each side of a triangle of a fingerprint image previously stored (Abstract).

Regarding claim 10, Califano et al. teaches the three first feature points which constitute the one triangle are, respectively, the first point, the second point and the third point.

A comparison means comparing an area and a length of each side of the triangle of the fingerprint image subject to collation, which are calculated by the first calculation means and the second calculation means

However Califano et al. fails to teach the following limitations that Fujii et al. does:

Fujii et al. teaches the information processing apparatus (Fig. 1A and col. 2, lines 4-9) as described in claim 9, wherein: the first detection means further detects second feature points which are the other one of the ridge bifurcations and the ridge endings; and further includes second calculation means for calculating at least one of a distance or a direction between a first point and a fourth point which is the one of the second feature points that is closest to the first point, at least one of a distance and a direction between a second point and a fifth point which is the one of the second feature points that is closest to the second point, and at least one of a distance and a direction between a third point and a sixth point which is the one of the second feature points that is closest to the third point (Fig. 30A-B, col. 18, lines 55-58, and col. 37, line 64 to col. 38 line 10).

As well as at least one of the distance and the direction of the fourth point relative to the first point, of the fifth point relative to the second point, and of the sixth point relative to the third point, with an area and a length of each side of the triangle of the stored fingerprint image as well as at least one of the distance and the direction of the fourth point relative to the first point, of the fifth point relative to the second point, and of the sixth point relative to the third point of the fingerprint image subject to collation (Fig. 30A-B, col. 18, lines 55-58, and col. 37, line 64 to col. 38 line 10).

The examiner takes into account that Fujii et al. doesn't specifically use "first, second, third…" points but does take the distance and direction of feature points, which can be the points specified by the applicant.

Taking the combined teachings of Califano et al. and Fujii et al., it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate more distances between more feature points to increase the accuracy of identifying a positive match between stored fingerprints and the one in question.

Regarding claim 11, see rejection made to claim 9, for it addresses the rejection made to the apparatus of this method. The Examiner also takes into account that while Fujii does not explicitly state "determination means for determining a distance between the center point and each of the plurality of first feature points," Fujii does determine the coordinates for the feature points including coordinates for the center of the fingerprint (col. 18, lines 55-66, . The center coordinate is used for matching, so that the feature points will match up before taking the specific distance and using a threshold to determine if there is a match. Thus the feature points correspond to the center of the fingerprint (col. 36, lines 57-60 and col. 37, lines 16-22). The Applicant uses the center to determine distances between the center and the feature points, however, this is the same as matching the center's first and then creating a triangle and determining distances. Also, since Fujii calculates the coordinates for the feature points and center, it would be clear to one of ordinary skill in the art that a simple computation based on the coordinates would give the distance from center to any feature point for matching, occurring in the information storing unit 94 (col. 37 line 59 to col. 38, line 10)..

Regarding claim 13, see rejection made to claim 9, for it addresses the rejection made to the apparatus of this computer-readable medium. The Examiner also takes into account that while Fujii does not explicitly state "determination means for determining a distance between the center point and each of the plurality of first feature points," Fujii does determine the coordinates for the feature points including coordinates for the center of the fingerprint (col. 18, lines 55-66, . The center coordinate is used for matching, so that the feature points will match up before taking the specific distance and using a threshold to determine if there is a match. Thus the feature points correspond to the center of the fingerprint (col. 36, lines 57-60 and col. 37, lines 16-22). The Applicant uses the center to determine distances between the center and the feature points, however, this is the same as matching the center's first and then creating a triangle and determining distances. Also, since Fujii calculates the coordinates for the feature points and center, it would be clear to one of ordinary skill in the art that a simple computation based on the coordinates would give the distance from center to any feature point for matching, occurring in the information storing unit 94 (col. 37 line 59 to col. 38, line 10).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL VANCHY JR whose telephone number is (571)270-1193. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Michael J. Vanchy Jr.
Examiner
(571) 270-1193
Michael.Vanchy@uspto.gov

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624